

3.7 Implicit Differentiation

differentiate:

$$y = 1 - x^2$$

$$x^2 + y = 1$$

$$y^2 = x$$

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Find the slope of the circle at the point (3,-4)

$$x^2 + y^2 = 25$$

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Implicit Differentiation Process

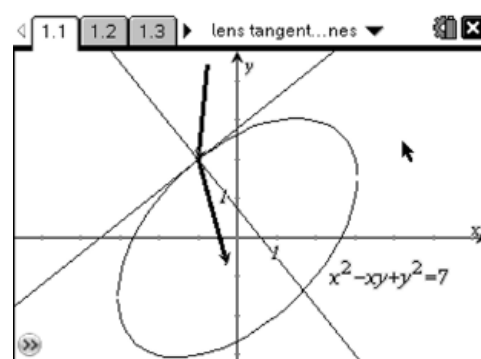
1. Differentiate both sides of the equation with respect to x .
2. Collect the terms with dy/dx on one side of the equation
3. Factor out dy/dx .
4. Solve for dy/dx .

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lens, tangents and normal lines

find the tangent and normal lines to the ellipse at the point $(-1,2)$

$$x^2 - xy + y^2 = 7$$



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higher order derivatives

Find the second derivative of y with respect to x

$$2x^3 - 3y^2 = 8$$

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